

Innovative firms: How they are captured by innovation surveys

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1. Innovation surveys: general information:

Innovation surveys aim at measuring innovation output and various aspects of innovation activities performed by firms: types of innovations (process vs. product), proportion of sales/exports due to innovation products, resources devoted to innovation, objectives of innovation, sources of information, co-operation for innovation, factors hampering innovation.

The guidelines for these surveys are set in the so-called “Oslo manual” (sub-titled: “Proposed guidelines for collecting and interpreting technological innovation data”), which second edition was issued early this year by the OECD and Eurostat.

Surveys have been carried out in most OECD member countries since the early 1990s. A second co-ordinated round (CIS-2) is currently experienced in European countries, under the leadership of Eurostat, and in a number of other OECD countries (see Annex 1).

2. Innovative capabilities in the Oslo manual and in the CIS-2 questionnaire:

As explicated in the Oslo manual, innovation survey do not aim at this stage at capturing non technological aspects of innovation activities of the firm, especially those related to organisational and managerial innovation. Nevertheless, the importance of this kind of innovation is acknowledged and Annex 2 of the Oslo Manual is devoted to the collection of non-technological innovation data (encouraging more exploratory work in Member countries).

In this narrower scope, however, some key aspects of the innovative capabilities and strategies of firms are addressed. Let us mention (see the CIS-2 questionnaire in annex to this document):

- On the resources devoted to innovation, the survey helps describing the investment strategy of firms through the quantity of resources allocated to research and development, the acquisition of disembodied technology and know how and acquisition of embodied technology (equipment linked to innovation), preparations for production (industrial engineering, “tooling up”, industrial design, production start-up, etc.) the acquisition of software, expenditures in training and in marketing.

- Patents: does the firm patent or not.

- On the objectives of innovation (e.g.: improving product quality, extend product range, reduce labour costs): how innovation is inserted in the overall strategy of the firm.

- Sources of information (e.g.: within the firm or the group it belongs to, competitors, universities, conferences): the strategy of the firm in building and expanding its knowledge base, the relative weight of external vs. internal sources, its links with public research.

- Innovation co-operation (with competitors, customers, suppliers, university, government): the strategy of the firm in building explicit links with external producers of technology.

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- Factors hampering innovation (e.g. organisational rigidities, lack of qualified personnel, lack of finance): weaknesses of the firm as seen by the firm itself.

It must also be underlined that most countries will carry out an innovation survey on the services industries. A special questionnaire have been finalised at Eurostat. In many services, organisation and human resources management are even closer to the heart of the innovation process than in manufacturing, and it is to be expected that results from these surveys will give new insights on the non technological aspects of innovation.

3. Results from past innovation surveys (CIS-1 and non European countries):

Results from all national surveys show the huge diversity of innovative strategies among firms, which is partly (but far from totally) explained by size and industry. Here are examples of the findings of innovation surveys in some countries:

- In the German innovation survey of 1995 (Licht et al. 1997), the lack of equity capital is ranked second by SMEs as an obstacle to innovation, whereas the lack of skilled personnel is not perceived as very binding by most firms, and the lack of know-how is ranked last both by SMEs and by large firms.

- In the French innovation survey of 1993 (SESSI 1996), R&D was ranked as the first source of knowledge both by SMEs and large firms, then came customers and suppliers, competitors, and almost last, universities and public labs. R&D co-operation is mentioned as the most used way of acquiring other firms' technology.

- In the Australian 1993/94 innovation survey (ABS 1994), 34 per cent of manufacturing firms undertook technological innovation and 24 per cent non-technological innovation, and the propensity to undertake innovation activities increased with the size of the firm. Improving product quality was the most important objective for innovative firms in the manufacturing. Clients and customers were the most important source of ideas/information to innovate, followed by R&D. Government laboratories, private research institutes, higher education institutions and patent disclosures were the sources which rated the least important. Lack of resources of finance was the factor which hampered manufacturing firms the most.

- In the Italian service sector (Evangelista and Sirilli 1997) more than one third of the surveyed firms have introduced technological innovations during the period 1993-1995, which is similar to manufacturing. The cost per employee of innovating in the services is half the cost in manufacturing. Resistance to change from management and staff is a highly rated obstacle to innovation, which is a major difference with manufacturing (financial factors). As for the sources of innovation, the acquisition and development of software, the purchase of machinery and equipment, and the training of employees are the most cited (in manufacturing it is rather R&D and the purchase of machinery and equipment).

- In Canada, a series of innovation surveys along with more focused surveys (on appropriability, on the financing of innovation, on biotechnology industries etc.) provided a global picture of innovative activities in firms (e.g. Baldwin and Johnson 1994).

4. Projects in the "new science and technology indicators" exercise:

The new S&T indicators exercise has one project on "innovative and absorptive capabilities of firms". One topics it addresses is the design of indicators which discriminate between innovating and non innovating firms, or which explain the innovating/ non innovating choice. Examples of indicators that this exercise will come out with are: intensity of various obstacles to innovation, of various aims, for different categories of enterprises. The role of these factors will be assessed in relation to other factors,

and to the characteristics of the firm (size, industry). The knowledge acquisition strategy of the firm will be inquired in the same way. All this implies the use in conjunction of data analysis and parametric techniques. Ideally, such indicators could tell that, for instance, co-operative ventures with universities are vital for firms of some size and some industry categories, when implemented along with active participation to professional conferences.

5. Conclusion:

Innovation surveys address only the technological aspects of firms strategies. As a consequence they leave aside, or cover poorly, other key aspects of innovative behaviour, related to organisation and human resources management for instance. For those aspects however other data sources are available, coming from administrative records or from ad-hoc surveys. Matching those various data sources at the firm level will allow to draw a more complete picture of those features which distinguish innovative from non innovative firms.

References:

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Evangelista R. and G. Sirilli (1997), "Innovation in the Service Sector. Results from the Italian Statistical Survey". Mimeo, NRC.

Licht G., W. Schnell and H. Stalh (1997), "Results of the German Innovation Survey 1995", ZEW Working Paper, Mannheim.

SESSI (1996), "L'innovation technologique dans l'industrie", Ministère de l'Industrie, Paris.

Annexes:

1. Overview of 1996-1997 national innovation surveys.
2. CIS-2 core questionnaire for the manufacturing sector.

ANNEX 1 -- OVERVIEW OF 1996-1997 NATIONAL INNOVATION SURVEYS

Country	Comparability with CIS-2	Kind of survey	Gross sample size &/or % Total populat.	Cut-off point	Reference period
Australia	☺/☹	Mandatory sample survey	<i>Manuf.:</i> 6 000 <i>Constr.:</i> 600 <i>Serv:</i> 2 600	<i>Manuf.:</i> 1 emp. <i>Mining.:</i> 20 <i>Other :</i> variable	1.7.94 to 30.6.97
Canada	☹	Mandatory sample survey	<i>Serv:</i> 6 500	1 employee	1994-96 or 1996
Czech Republ.	☹	Voluntary sample survey	155 (5 per cent)	25 employees	1993-95
Hungary	☺	Voluntary sample survey			
Iceland	☺	Voluntary sample survey	2 600	5 employees	1994-96 or 1996
Korea		Voluntary Census>300 emp. sample<300 emp.	6 800		
Japan					
Mexico	☺	Voluntary sample survey	2 500	50 employees	1994-96 or 1996
New-Zealand					
Poland	☹	Mandatory survey census >19/49 20/50>sample>5	1250	<i>Manufact.:</i> 5 <i>Mining:</i> 50 <i>Utilities:</i> 20	1994-96 or 1996
Slovak Republic	☹				1994-96 or 1996
Switzerland	☹	Voluntary sample survey	<i>Manuf.:</i> 2 800 <i>Constr.:</i> 600 <i>Serv:</i> 2 600	5 employees	1994-96 or 1995
Turkey	☺/☹	Mandatory sample survey	Not yet decided	20 employees	1994-96 or 1996
United States	☺	Voluntary sample survey	To be determined	To be determined	as closed as possible to CIS-2

IN NON-EU MEMBER COUNTRIES (JUNE 1997)

Coverage¹	Response rate	Availability of data	Remarks	Country
<i>Manufacturing:</i> 15-36 <i>Services:</i> 65-67, 642, 72 <i>Agriculture:</i> 1, 2, 5 <i>Mining:</i> 10-14	Expected 95 percent	End June 1988	Mailing questionnaire August 1997	Australia
<i>Services:</i> 642, 9213, 6519, 6601, 6603, 6712, 7123-7250, 7310-7422	85 %	September 1997	<i>Manufacturing</i> will not be surveyed before a full exploration of <i>Services</i> survey results be done	Canada
<i>Manufacturing:</i> 15-37 <i>Services:</i> -	56 percent	First Quarter 1997	Based on the first edition of the <i>Oslo Manual</i>	Czech Rep.
<i>Manufacturing:</i> <i>Services:</i> <i>Agriculture:</i>			No decision yet to carry out an innovation survey, subordinated to EC financial support	Hungary
<i>Manufacturing:</i> 01-45 <i>Services:</i> 60-64 & 70-74	60 percent accepted	First Quarter 1998	The survey will be launched in September 1997	Iceland
<i>Manufacturing:</i> 15-36 <i>Services:</i> -		June 1997	Based on the first edition of the <i>Oslo Manual</i>	Korea
			No information	Japan
<i>Manufacturing:</i> 15- 37 <i>Services:</i> 642, 65-67, 72	75 percent expected	Late 09.1997	In the testing questionnaires phase	Mexico
			No planned innovation survey	New Zealand
<i>Manufacturing:</i> 15-37 <i>Mining:</i> 10-14 <i>Utilities:</i> 40, 41	80 percent	09.1997	Census for entrep. over 49 empl. for <i>Mining & Manuf.</i> and over 19 empl. for <i>Utilities</i> , sample surv. of entrep. 6-49 empl. for <i>Manuf.</i>	Poland
			No decision yet to carry out an innovation survey, subordinated to EC financial support	Slovak Republic
<i>Manufacturing:</i> 15-37 <i>Services:</i> private only <i>Construction:</i> 45	<i>Man.:</i> 34% <i>Const.:</i> 35% <i>Serv.:</i> 31%	Second part of 1997		Switzerland
<i>Manufacturing:</i> 15-37 <i>Services:</i> 642, 65-67, 72, 742. Coverage under discussion for 51, 60-62		Spring 1998	The survey will be launched in September 1997	Turkey
Selected <i>Manufacturing</i> & <i>Services</i> industries	Goals of 80%		No firm plans for survey at this time, only current intention	United States

1. Based on ISIC rev. 3 or NACE rev. 1 codes.

OVERVIEW OF 1996-1997 NATIONAL INNOVATION SURVEYS (CIS-2)

Country	Comparability with CIS-2	Kind of survey	Gross sample size	Cut-off point	Refer. period
Austria		Census>100-150 Sample<100-150	<i>Man.:</i> } <i>Serv.:</i> } 1700		
Belgium	☺	Voluntary sample survey	<i>Man.:</i> } <i>Serv.:</i> } 3500	<i>Man.:</i> } <i>Serv.:</i> } 10	1994-96 or 1996
Denmark		Voluntary sample survey	<i>Man.:</i> 1300 - 1400 <i>Serv.:</i>		1994-96 or 1996
Finland	☺	Voluntary sample survey	<i>Man.:</i> 1691 <i>Serv.:</i> 1049	<i>Man.:</i> } <i>Serv.:</i> } 10	1994-96 or 1996
France	☺	Mandatory sample survey	<i>Man.:</i> 5000 <i>Serv.:</i> 3000	<i>Man.:</i> 20 <i>Serv.:</i> 10	1994-96 or 1996
Germany	<i>Manufact.:</i> ☺	Voluntary sample survey	<i>Man.:</i> <i>Serv.:</i>	<i>Man.:</i> 10 <i>Serv.:</i> 5	1994-96 or 1996
Greece					
Ireland	☺	Voluntary sample survey		<i>Man.:</i> 20 <i>Serv.:</i> 10	1994-96 or 1996
Italy	☺/☹	Mandatory sample survey	<i>Man.:</i> 14000 <i>Serv.:</i> 3258	<i>Serv.:</i> } 20	1993-95 or 1995
Luxembourg	☺	Voluntary survey <i>Manufact.:</i> census <i>Services:</i> sample	<i>Man.:</i> 200 <i>Serv.:</i> 200	<i>Man.:</i> } <i>Serv.:</i> } 10	1994-96 or 1996
Netherlands	☺	Voluntary survey Census>50 empl. sample: 10-50 em	<i>Man.:</i> 4732 <i>Serv.:</i> 5070	<i>Man.:</i> 20 <i>Serv.:</i> 10	1994-96 or 1996
Norway					1994-96 or 1996
Portugal				<i>Man.:</i> } <i>Serv.:</i> } 10	
Spain	☺/☹				
Sweden	☺	Voluntary sample survey	<i>Man.:</i> 1040 <i>Serv.:</i> 1108	<i>Man.:</i> 20 <i>Serv.:</i> 10	1994-96 or 1996
United Kingdom	☺	Voluntary sample survey	<i>Man.:</i> 631 <i>Other sect.:</i> 5662	<i>Man.:</i> 10 or 20 <i>Serv.:</i> 10	1994-96 or 1996

IN EU MEMBER COUNTRIES PLUS NORWAY (June 1997)

Coverage²	Response rate	Availability of data	Remarks	Country
“CIS-2”			launching the survey not before Sept. 1997	Austria
“CIS-2”			launching the survey Sept./Oct. 1997	Belgium
			launching the survey August 1997	Denmark
“CIS-2”	Goals of 60-70 %		launching the survey April 1997	Finland
“CIS-2” less Serv. 51, 65-67 plus Other	80 % expected	Beginning 1998	launching the survey September 1997	France
			launching the survey May 1997	Germany
				Greece
“CIS-2”	Goals of 70 %	1998	launching the survey Sept. 1997	Ireland
<i>Market Serv.:</i> 50-52, 55, 60-67, 70-74	54.3 %	<i>Serv.:</i> May/June 1997	Survey of <i>Manuf.</i> not started Survey of <i>Services</i> achieved	Italy
“CIS-2”			launching the survey April 1997	Luxembourg
“CIS-2” plus Other			launching the survey May 1997	Netherlands
			survey will be launched beginning 1998.	Norway
“CIS-2”			launching the survey September 1997	Portugal
<i>Man.:</i> 15-37 <i>Serv.:</i> -			Survey in progress, based on a preliminary version of CIS-2 questionnaire	Spain
“CIS-2” plus Other			launching the survey April 1997	Sweden
“CIS-2” plus Other		April 1998	launching the survey July or Sept./Oct. 1997	United Kingdom

² “CIS-2” = Manufacturing 15-37; Electricity, Gas and Water supply 40-41; Services 51,60-62, 642, 65-67, 72, 742.

ANNEX 2 -- CIS-2 QUESTIONNAIRE



Eurostat/A4

MANUFACTURING SECTOR

The second Community Innovation Survey

Core questionnaire
5 March 1997

General information about the enterprise

Name of enterprise _____

Address (NUTS 2 code³) _____

Main activity (NACE Rev. 1, 4-digits code⁴) _____

Is your enterprise (tick the most appropriate alternative)

Independent ?

Part of an enterprise group ?

If your enterprise belongs to an enterprise group, what is the country⁵ of head office ? _____

Did any of the following significant changes (affecting turnover at least 10%) occur to your enterprise between 1994 and 1996?

	Yes	No
Your enterprise was established	<input type="checkbox"/>	<input type="checkbox"/>
Turnover increased due to merger with another enterprise or part of it	<input type="checkbox"/>	<input type="checkbox"/>
Turnover decreased due to sale or closure of part of the enterprise	<input type="checkbox"/>	<input type="checkbox"/>

Please give the following basic general information on your enterprise (only domestic units should be included)

Number of employees end 1996 (or other relevant reporting time) _____
change 1994-96 _____ %

Turnover 1996 _____
change 1994-96 _____ %

Exports 1996 _____
change 1994-96 _____ %

Name of respondent _____

Job title _____

Phone _____ Fax _____

E-mail _____

³ NUTS 2 code has to be supplied to Eurostat

⁴ NACE Rev 1, 4-digits code has to be supplied to Eurostat

⁵ Country code according to ISO standard has to be supplied to Eurostat

Scope and impact of technological innovation and innovation activity of the enterprise

Technological innovations comprise implemented technologically new products and processes and significant technological improvements in products and processes. An innovation has been **implemented**, if it has been introduced on the market (product innovation) or used within a production process (process innovation). The product or process should be new (or significantly improved) to the enterprise (it does not necessarily have to be new to the enterprise's market).

Technological innovation requires an objective improvement in the performance of a product or in the way in which it is produced or delivered. The following changes **are not technological innovations**:

- *improvements of products that make them more attractive to the purchasers without changing their "technological" characteristics*
- *minor technological changes of products and processes or changes which does not have the sufficient degree of novelty*
- *changes of products and processes, where the novelty does not concern the use or objective performance characteristics of the products or the way they are produced or delivered but rather their aesthetic or subjective qualities*

(see page 8 for some further examples of innovations and changes not counted as innovations)

Innovation activities are all those steps necessary to develop and implement technologically new or improved products or processes.

1. Between 1994-96, has your enterprise introduced onto the market any technologically new or improved products?⁶

A **technologically new product** is a product whose technological characteristics or intended uses differ significantly from those of previously produced products. Such innovations can involve radically new technologies, can be based on combining existing technologies in new uses, or can be derived from the use of new knowledge.

A **technologically improved product** is an existing product whose performance has been significantly enhanced or upgraded. A simple product may be improved (in terms of better performance or lower cost) through use of higher-performance components or materials, or a complex product which consists of a number of integrated technical subsystems may be improved by partial changes to one of the subsystems.

Yes []

No []

If yes, who developed these products? (tick appropriate alternatives for different products)

Mainly other enterprises or institutes []

Your enterprise and other enterprises or institutes []

Mainly your enterprise []

2. Between 1994-96 has your enterprise introduced any technologically new or improved processes?⁷

Technological process innovation is the adoption of technologically new or significantly improved production methods, including methods of product delivery. These methods may involve changes in equipment, or production organisation, or a combination of these changes, and may be derived from the use of new knowledge. The methods may be intended to produce or deliver technologically new or improved products, which cannot be produced or delivered using conventional production methods, or essentially to increase the production or delivery efficiency of existing products.

Yes []

No []

If yes, who developed these processes? (tick appropriate alternatives for different processes)

Mainly other enterprises or institutes []

Your enterprise and other enterprises or institutes []

Mainly your enterprise []

⁶ It is recommended that national surveys include a request to describe the most important technologically new or improved product or process.

⁷ It is recommended that national surveys include a request to describe the most important technologically new or improved product or process.

3. Between 1994-96, did your enterprise have unsuccessful or not yet completed projects to develop or introduce technologically new or improved products or processes?

Yes []

No []

If questions 1-3 above have all been answered with no, please still answer question 12 at the end of the questionnaire.

4. Turnover in 1996 due to technologically new or improved products to your enterprise (see definitions for question 1, page 3)

Please estimate how your turnover in 1996 was distributed between

Technologically new products introduced between 1994 and 1996 _____%

Technologically improved products introduced between 1994 and 1996 _____%

Unchanged or only marginally modified products between 1994 and 1996, other turnover _____%

Total turnover in 1996 100 %

5. Turnover in 1996 due to technologically new or improved products also new to your enterprise's market

Some of the technologically new or improved products included in the previous question might be new not only for your enterprise but also to your enterprise's market

Between 1994 and 1996, did your enterprise introduce technologically new or improved products new not only to your enterprise but also to your enterprise's market?

Yes []

No []

If yes, please estimate the share of turnover due to these products in 1996 _____%

6. Resources devoted to innovation activities in 1996

In this question some information is asked about engagement in and resources devoted to the following innovation activities of the enterprise.

Research and experimental development (R&D)⁸ comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge, and the use of this stock of knowledge to devise new applications, such as technologically new or improved products and processes. Construction, design and testing of a prototype is often the most important phase of R&D. Software development is included as long as it involves making a scientific or technological advance. R&D can be carried out within the enterprise or R&D services can be acquired.

Acquisition of machinery and equipment(including integrated software) **linked to product and process innovations** implemented by the enterprise

Acquisition of other external technology linked to product and process innovations in the form of patents, non-patented inventions, licenses, know-how, trademarks, drawing plans and consultancy services (excluding R&D), related to the implementation of technological innovations, plus the acquisition of packaged software that is not classified elsewhere.

Industrial design and other production preparations for technologically new or improved products include plans and drawings aimed at defining procedures, technical specifications and operational features necessary for the production of technologically new or improved products and the implementation of technologically new processes. This item also include changes in production and quality control procedures, methods and standards and associated software required to produce the technologically new or improved product or to use the technologically new or improved process. Product or process modifications needed to start production, including trial production (not included in R&D) are also included.

Training directly linked to technological innovations is training for the implementation of a technologically new or improved product or process. Expenditure for training might include acquisition of external services and expenditure for in-house training.

Market introduction of technological innovations includes activities in connection with the launching of a technologically new or improved product. These may include preliminary market research, market tests and launch advertising, but will exclude the building of distribution networks to market innovations.

Did your enterprise engage in the following innovation activities in 1996?

	Yes	No	if yes, please estimate expenditure involved
- Research and experimental development within the enterprise (intramural R&D)	[]	[]	_____
- Acquisition of R&D services (extramural R&D)	[]	[]	_____
- Acquisition of machinery and equipment linked to product and process innovations	[]	[]	_____
- Acquisition of other external technology linked to product and process innovations	[]	[]	_____
- Industrial design, other production preparations for technologically new or improved products	[]	[]	_____
- Training directly linked to technological innovations	[]	[]	_____
- Market introduction of technological innovations	[]	[]	_____
Total expenditure			_____

The expenditure items should cover current (labour costs, acquisition of services, materials, etc.) and capital expenditure (instruments and equipment, computer software, land and buildings). If it is not possible to estimate all expenditure items involved, please at least indicate, if your enterprise has been engaged in a particular innovation activity or not.

R&D personnel within the enterprise in 1996 (in full time equivalents) _____

Did your enterprise engage in R&D between 1994 and 1996?

Continuously [] Occasionally [] Not at all []

⁸ The definition of R&D should be translated according to usual practice in R&D surveys.

10. Sources of information for innovation between 1994 and 1996

The main sources of information needed for suggesting new innovation projects or contributing to completion of existing projects are asked in this question.

Please indicate the degree of importance attached to various alternatives by ticking 0=not used, 1=slightly important, 2=moderately important, 3=very important

Information source	Not used	If used, Importance		
	0	1	2	3
Sources within the enterprise Other enterprises within the enterprise group Competitors Clients or customers Consultancy enterprises Suppliers of equipment, materials, components or software Universities or other higher education institutes Government or private non-profit research institutes Patent disclosures Professional conferences, meetings, journals Computer based information networks Fairs, exhibitions				

11. Innovation co-operation between 1994 and 1996

Innovation co-operation means active participation in joint R&D and other innovation projects with other organisations. It does not necessarily imply that both partners derive immediate commercial benefit from the venture. Pure contracting out work, where there is no active participation, is not regarded as co-operation.

Did your enterprise have any co-operation arrangements on innovation activities with other enterprises or institutions in 1994-1996?

Yes []

No [] (go to question 12)

If yes, please indicate by ticking the type of organisation and location of your co-operation partner

Type of partner	Location of partner				
	National	EU	USA	Japan	Other
Other enterprises within the group Competitors Clients or customers Consultancy enterprises Suppliers of equipment, materials, components or software Universities or other higher education institutes Government or private non-profit research institutes					

12. Factors hampering innovation

The innovation activity of your enterprise could be hampered by various factors, which might prevent innovation projects or slow up or stop projects in progress.

a) Has at least one innovation project in 1994-1996 been

	Yes	No
- seriously delayed	[]	[]
- abolished	[]	[]
- not even started	[]	[]

b) If yes on at least one question, tick the relevant factors in the respective columns

Hampering factors	seriously delayed	abolished	not even started
Excessive perceived economic risks			
Innovation costs too high			
Lack of appropriate sources of finance			
Organisational rigidities			
Lack of qualified personnel			
Lack of information on technology			
Lack of information on markets			
Fulfilling regulations, standards			
Lack of customer responsiveness to new products			

Selected examples of innovation and other changes not regarded as innovation

In custom production (production of single products on order), a criterion for qualifying as a technological innovation could be that the planning of the product includes construction and testing of a prototype or other research and development activities in order to change one or more of the product's attributes.

Change in clothing production is very largely a matter of fashion. For these firms, rapid introduction of the latest colours and cut is a key element in their competitiveness. But colour and cut do not change the essential characteristics or performance of clothing, i.e. that it should keep the body at an appropriate temperature, be comfortable to wear and easy to maintain. Technologically improved products here almost always involve the use of new materials diffused by the textile industry and, before that, the chemical industry. For example, the introduction of drip-dry shirts, or "breathable" waterproof mountain gear, is a technological product innovation.

The implementation of a quality standard such as ISO 9000 is not technological innovation unless it is directly related to the introduction of technologically new or significantly improved products or processes

The retitling and repackaging of an existing soft drink popular with older people, to establish a link with a football team in order to reach the youth market, is not technological innovation.

New models of complex products, such as cars or television sets, are not product innovation, if the changes are minor compared with the previous models, for example offering a radio in a car. If the changes are significant, based on new designs or technical modifications to subsystems, the improved products could be considered as product innovations.